In the Claims

1. (Currently amended)   A method of <u>testing equipment operatively connected to a</u> ~~communicating over a plurality of different~~ target ~~media each~~ <u>medium</u> having a protocol, comprising:

providing, ~~for each of the plurality of different target media,~~ a plurality of communication element types hierarchically representing different communication elements for the respective protocol~~,~~<u>;</u>

<u>providing an electronic instrument for operatively connecting to the equipment over the target medium and operating under control of a software program;</u>

<u>instantiating, by the software program, at least one of the plurality of communication element types to create a transmit message instance;</u>

<u>instantiating, by the software program, at least one of the plurality of communication element types to create an expect message instance;</u>

<u>directing, by the software program, the electronic instrument to transmit a message to the equipment according to the transmit message instance and to receive a message from the equipment according to the expect message instance; and</u>

<u>comparing the message received from the equipment with expected results to determine whether expected results were obtained,</u>

wherein each communication element type <u>is</u>~~being~~ a user-defin<u>ed</u>~~able~~ data structure that pertains to a particular layer of the ~~respective~~ protocol,<u>and</u>

wherein at least some communication element types relating to higher layers of the protocol include references to one or more communication element types relating to lower layers of the protocol~~, and~~

~~wherein the plurality of communication element types are accessible to at least one software program for directing communications over the respective target medium.~~

2. (Canceled)

1   3. (Currently amended)   A method as recited in claim 1, wherein the step of
2   providing <u>a plurality of communication element types</u> comprises defining one or more of
3   the plurality of communication element types responsive to exchanges allowed by the
4   protocol of the respective target medium.

1   4. (Canceled)

1   5. (Previously presented)   A method as recited in claim 1, wherein at least one of the
2   plurality of communication element types defines a structure for transmitting data over
3   the target medium.

1   6. (Previously presented)   A method as recited in claim 1, wherein at least one of the
2   plurality of communication element type defines a structure for receiving data over the
3   target medium.

1   7. (Original)   A method as recited in claim 1, wherein at least one communication
2   element type is a message type that includes a portion for holding message data
3   associated with instances of the respective message type.

1   8. (Original)   A method as recited in claim 7, wherein the message data has a fixed
2   length.

1   9. (Original)   A method as recited in claim 7, wherein the message data has a variable
2   length.

1   10. (Previously presented)   A method as recited in claim 1, wherein at least one of the
2   communication element types has a fixed portion that is the same for all instances of the
3   communication element type.

1   11. (Canceled)

1 12. (Original) A method as recited in claim 1, wherein the plurality of communication

2 element types includes at least one message type, and each instance of the message type

3 includes a portion for prescribing timing.

1 13. (Previously presented)   A method as recited in claim 12, wherein the timing

2 includes a setting for specifying a pre-message gap.

1 14. (Original) A method as recited in claim 12, wherein the timing includes a setting for

2 specifying a pre-word gap.

1 15. (Original) A method as recited in claim 12, wherein the timing includes a setting for

2 specifying a begin message timeout.

1 16. (Original) A method as recited in claim 12, wherein the timing includes a setting for

2 specifying a trailing gap.

1 17. (Currently amended)   A method of <u>as recited in claim 1</u><s>structuring</s>

2 <s>communications over a communication medium having a known protocol</s>, <u>further</u>

3 comprising<u>, prior to the step of directing</u>:

4   <s>providing a plurality of communication element types for representing</s>

5 <s>communication elements at different layers of the protocol, each communication element</s>

6 <s>type having a user-definable structure that pertains to a corresponding layer of the</s>

7 <s>protocol;</s>

8   <s>in a software program, creating an instance of at least one of the plurality of</s>

9 <s>communication element types;</s>

10   varying at least one characteristic of the <u>transmit message</u> instance <u>by</u><s>in</s> the

11 software program<s>; and</s>

12   <s>operating the software program to direct communications over the</s>

13 <s>communications medium according to the instance with the varied characteristic and to</s>

14 <s>determine a susceptibility of equipment operatively connected to the communication</s>

15 <s>medium to the varied characteristic.</s>

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1   18. (Previously presented) A method as recited in claim 17, wherein the at least one
2   characteristic includes a timing characteristic.

1   19. (Currently amended)   A method as recited in claim 1 ~~of creating an interface with~~
2   ~~a communication medium having a protocol~~, further comprising:
3   ~~creating a plurality of user-definable communication element types for~~
4   ~~representing communication elements at different layers of the protocol;~~
5   saving the plurality of communication element types in a computer readable
6   format~~;~~
7   ~~accessing the saved communication element types by a software program;~~
8   ~~instantiating, via the software program, one or more of the plurality of~~
9   ~~communication element types to create one or more specific instances of communications~~
10   ~~over the communication medium; and~~
11   ~~operating the software program to run the one or more specific instances of~~
12   ~~communications over the communications medium.~~

1   20. (Previously presented)   A method as recited in claim 1,
2   wherein the plurality of user-definable communication element types include
3   message types, word types, and field types,
4   wherein at least one message type includes a reference to at least one word type,
5   and
6   wherein at least one word type includes a reference to at least one field type.

1   21. (Previously presented)   A method as recited in claim 4, further comprising creating
2   multiple instances of one of the plurality of communication element types.

1   22. (Currently amended ~~Previously presented~~)   A method as recited in claim 21,
2   further comprising processing each of the multiple instances for exchanging information
3   on the ~~respective~~ target medium.

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1   23. (Currently amended)   A method as recited in claim 17, ~~wherein the software~~
2   ~~program is a test program for testing equipment connected to the communication~~
3   ~~medium, the method~~ further comprising creating multiple instances of one of the plurality
4   of communication element types in the <u>software</u> ~~test~~ program.

1   24. (Currently amended)   A method as recited in claim 23, further comprising,
2   varying characteristics of each of the multiple instances created in the ~~test~~ <u>software</u>
3   program in different ways.

1   25. (Currently amended)   A method of communicating over a target medium having a
2   protocol, comprising:

3   providing a plurality of communication element types for representing different
4   communication elements of the protocol, each of the plurality of communication element
5   types being a user-<u>defined</u>~~dable~~ data structure that pertains to a particular layer of the
6   protocol,

7   <u>providing an electronic instrument for operatively connecting to the target</u>
8   <u>medium for communicating over the target medium;</u>

9   <u>providing a software program for controlling the electronic instrument;</u>

10   arranging the plurality of communication element types hierarchically, with at
11   least one communication element type relating to a higher layer of the protocol including
12   a reference to at least one communication element type relating to a lower layer of the
13   protocol,

14   ~~accessing~~ <u>instantiating</u> at least one of the plurality of communication element
15   types by <u>the</u>~~a~~ software program <u>to create at least one communication element instance;</u>
16   and

17   <u>operating the software program to control the electronic instrument to</u> direct~~ing~~
18   communications <u>over the target medium,</u> responsive to <u>each</u> ~~the accessed~~ communication
19   element <u>instance</u>~~type(s), over the target medium using the software program~~.

20   26. (Currently amended)   A method of communicating over a target medium having a
21   protocol, comprising:

1   providing a plurality of message types and word types for representing
2   communications using the protocol, each of the plurality of message types and word types
3   being a user-definable data structure;

4   <u>providing an electronic instrument operatively connecting to the target medium</u>
5   <u>for communicating over the target medium;</u>

6   <u>providing a software program for controlling the electronic instrument;</u>

7   arranging the plurality of message types and word types hierarchically, with at
8   least one message type including a reference to at least one word type;

9   ~~accessing~~ <u>instantiating the</u> at least one ~~of the plurality of~~ message types ~~and word~~
10   ~~types~~ by ~~a~~<u>the</u> software program <u>to create at least one message instance</u>; and

11   <u>operating the software program to control the electronic instrument to</u> direct~~ing~~
12   communications <u>over the target medium</u>, responsive to the ~~accessed~~ message <u>instance</u>~~type~~
13   ~~and/or word type over the target medium using the software program~~.

14   27. (New)   A method as recited in claim 1, wherein the step of creating at least one
15   instance of an accessed communication element type comprises the software program
16   accessing a software applications program interface (API).

17   28. (New)   A method as recited in claim 1, wherein the step of creating at least one
18   instance of an accessed communication element type comprises the software program
19   accessing a VXI plug-and-play driver.